



# Product Manager for Mortar Systems

The Road To The Objective Force  
"Armaments for the Army Transformation"

**20 June 2001**

LTC Larry Hollingsworth  
PM Mortars

Tank-automotive & Armaments COMmand

## Report Documentation Page

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# *Purpose*

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*Demonstrate how **PM Mortar Systems**  
is **Nested** with  
**DSA, TACOM, and AMC**  
In support of **The Army Transformation***

*Provide an orientation on How  
**PM Mortar Systems** will  
**Support The Army Transformation***

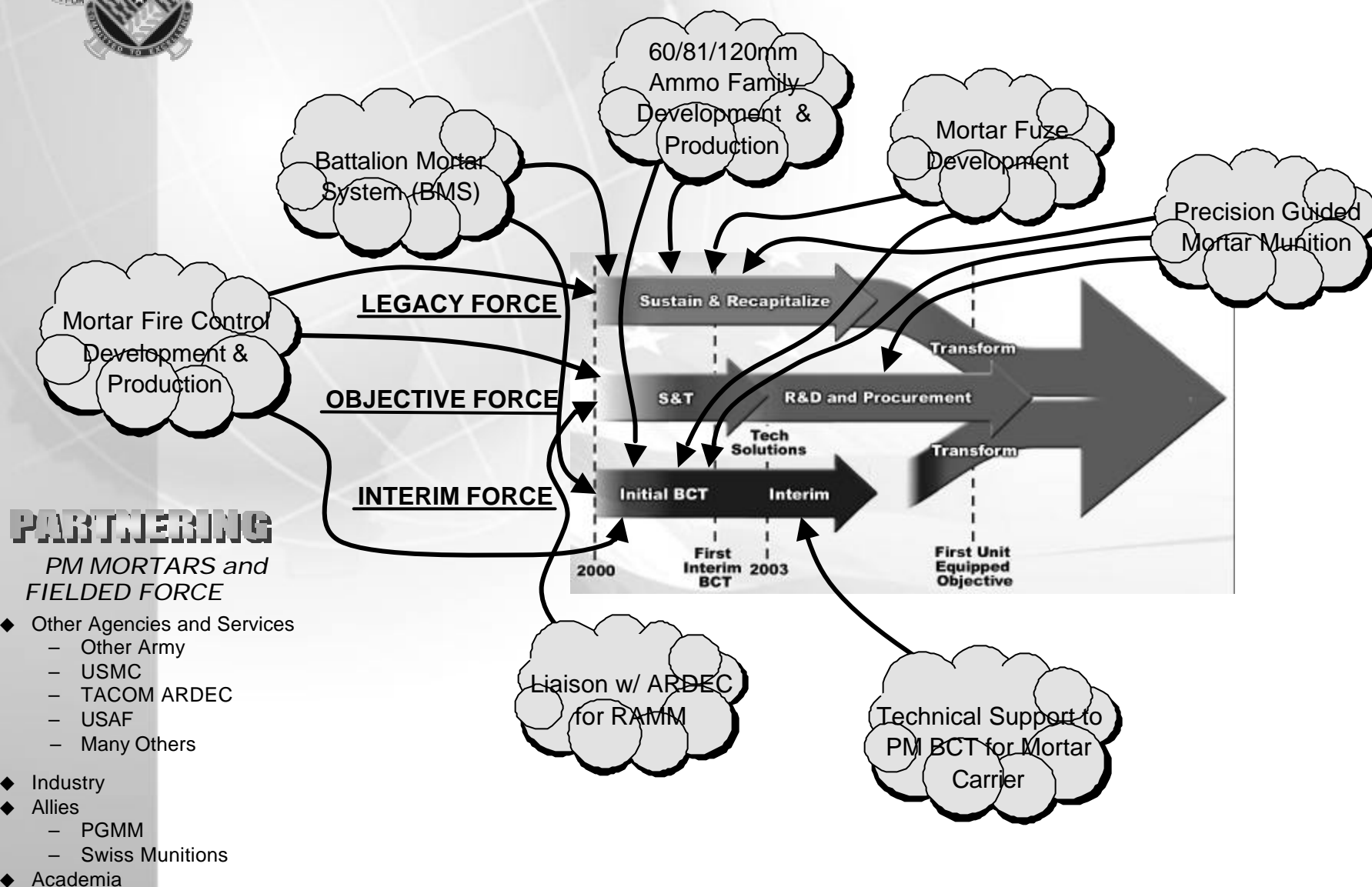
# Outline

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*Support to Army Transformation*  
*Mortar Systems*  
*Brigade Combat Team*  
*Infrared Illumination*  
*Precision Guided Mortar Munition*  
*Mortar Fire Control System*  
*Summary*



# PM Mortars Support to Army Transformation



# Mortars: Organic Fire Support

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## Your Father's Mortar:

- Same Mission
- Influence the Red Zone
- Maneuver Commander's Organic Fire Support



## Not your Father's Mortar:

- Digital Fire Control
- Improved Munitions
- Increased Lethality

*“K Comp’ny artillery commander speakin’.”*

(Bill Mauldin, *Up Front*, 1944)

# *U.S. Army Mortar Weapon Systems*

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60mm M224 Lightweight Mortar

- Early 70's
- 1,400 Systems
- \$11K
- Late 80's
- 1,300 Systems
- \$23K



Brigade Combat Team



81mm M252 Improved Mortar



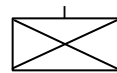
120mm M120 Towed Mortar

- Early 90's
- 54 Systems
- \$21K
- Mid 90's
- 1,100 Systems
- \$21K

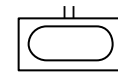
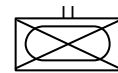


120mm M121 Carrier Mortar

# U.S. Army Mortars Current Distribution

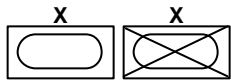


Per Company



Per Battalion (Mortar Platoon)

(4 Per Bn X 3 Bn)



**Heavy Brigades**

12 X 120mm

(2 Per Co X 9 Co)



2 X 60mm

4 X 120mm



1 FDC

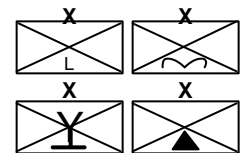


1 FDC



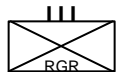
4 X 81mm

(4 Per Bn X 3 Bn)



**Light Brigades**

12 X 81mm 18 X 60mm



**Ranger Regiment**

4 X 120mm 4 X 81mm

6 X 60mm

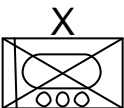
**Arms Room Concept**



Mortar Arms Room

4 X 120mm / 4 X 81mm / 6 X 60mm

1 FDC



**Brigade Combat Team\***

36 X 120mm 12 X 81mm

18 X 60mm

\* Includes RSTA Sqdn which has 6 x 120mm

2 X 120mm



Each Mortar Carrier can also transport:



M224 60mm

4 X 120mm



Each Mortar Carrier can also transport:



M252 81mm

1 FDC



**36 120mm Mortars in the BCT**

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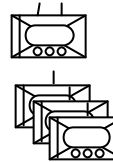
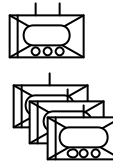
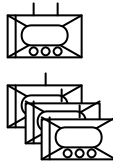
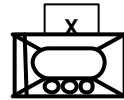


# Interim Brigade Combat Team Mortars: Brigades 1 and 2

## FUE Bn (-) is 1QFY03, FUE Bde 2QFY03

### Ammunition Storage

120mm Only      60 rounds  
 Battalion (120/81mm) 45 / 25  
 Company (120/60mm) 45 / 75



**Mortar Carriers: 36 (+2 ORF)**

**M121 120mm Mortar Carrier  
 Dismounted for Firing**

4 per Bn HHC x 3 Bn

### Each Battalion Mortar Platoon

One Platoon per Battalion



4 X 120mm Mortar Carrier

Each Vehicle Stores & Transports:



M121 120mm System  
 (Dismount for Firing)

and

M252 81mm System



1 FDC Vehicle with  
 Two M23 MBCs

**12 Mortar Carriers  
 at Battalion Level**

4 per Bn HHC x 3 Bn

### Each Company Mortar Section

One Section per Company



2 X 120mm Mortar Carrier

Each Vehicle Stores & Transports:



M121 120mm System  
 (Dismount for Firing)

and

M224 60mm System



Each Vehicle has a  
 M23 MBC

**18 Mortar Carriers  
 at Company Level**

### RSTA Squadron

One Squadron per Brigade



6 X 120mm Mortar Carrier

Each Vehicle Stores & Transports:



M121 120mm System  
 (Dismount for Firing)



Each Vehicle has a  
 M23 MBC

**6 Mortar Carriers  
 in RSTA Squadron**

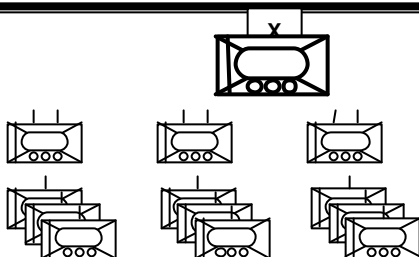
**Plus 2 120mm MCs  
 per Brigade (ORF)**

# **Interim Brigade Combat Team Mortars, Block Improvement:**

3<sup>rd</sup> through 6<sup>th</sup> Brigades (3<sup>rd</sup> Bde Fielding in FY04), 1<sup>st</sup> & 2<sup>nd</sup> BCTs retrofitted

## **Ammunition Storage**

**120mm Only**                      **60 rounds**  
**Battalion (120/81mm)**    **45 / 25**  
**Company (120/60mm)**    **45 / 75**



**Mortar Carriers: 36 (+2 ORF)**

Block Improvement:  
Mountd 120mm  
and  
XM95 MFCS

## **Each Battalion Mortar Platoon**

**One Platoon per Battalion**



4 X 120mm Mortar Carrier

Each with Mounted 120mm Mortar and  
XM95 Mortar Fire Control System (MFCS)

Each vehicle also transports:



M252 81mm System



1 FDC Vehicle with  
Two M23 MBCs for  
Dismounted Ops.

**12 Mortar Carriers  
at Battalion Level**

## **Each Company Mortar Section**

**One Section per Company**



2 X 120mm Mortar Carrier

Each with Mounted 120mm Mortar  
and XM95 MFCS

Each vehicle also transports:



M224 60mm System



Each Vehicle has a  
M23 MBC for  
Dismounted Ops.

**18 Mortar Carriers  
at Company Level**

## **RSTA Squadron**

**One Squadron per Brigade**



6 X 120mm Mortar Carrier

Each with Mounted 120mm  
and XM95 MFCS

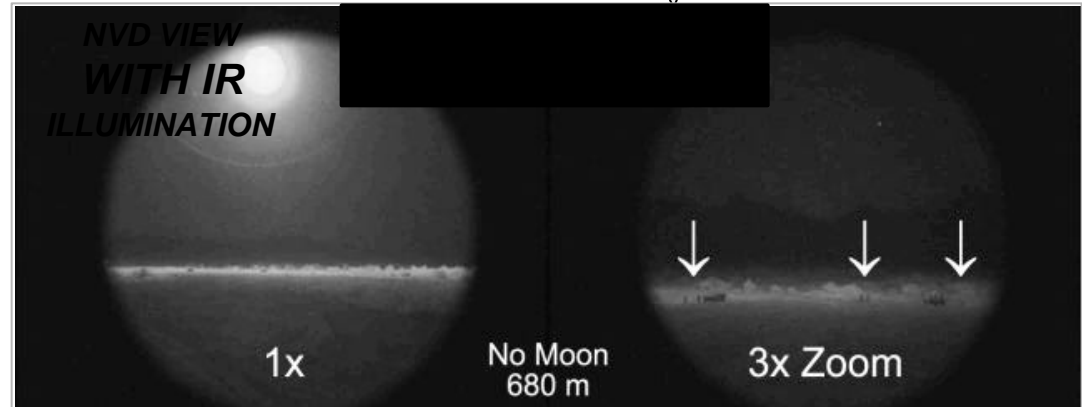


Each Vehicle has a  
M23 MBC for  
Dismounted Ops.

**6 Mortar Carriers  
in RSTA Squadron**

**Plus 2 120mm MCs  
per Brigade (ORF)**

# World's First Mortar Infrared Illumination



Materiel Release (FY):  
60mm M767 2Q01  
120mm M983 4Q03  
81mm XM816 1Q02

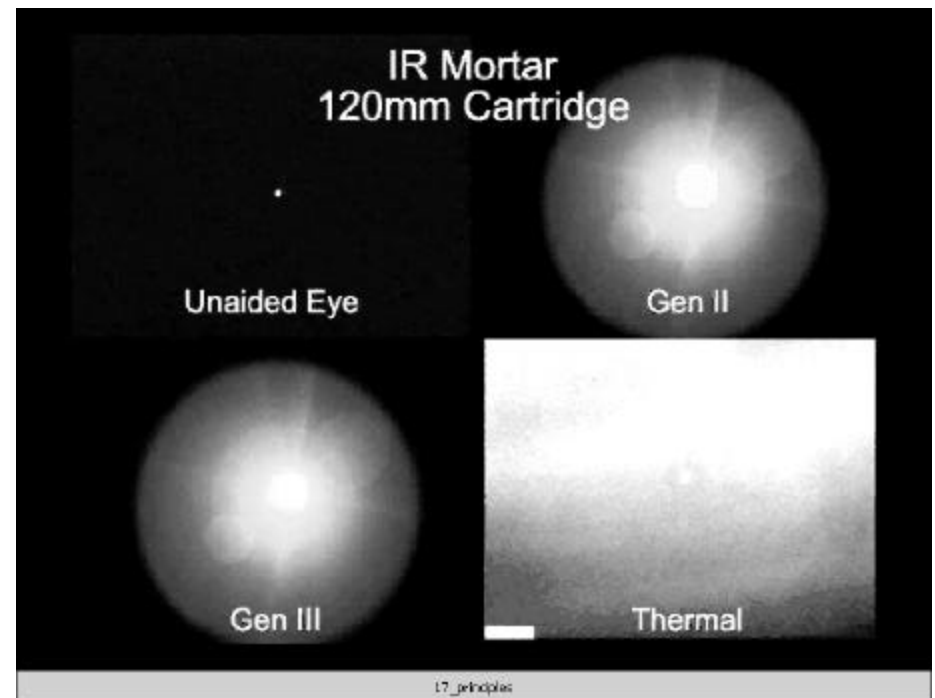
Enhancing Night  
Operations



# *IR Illum in Action*

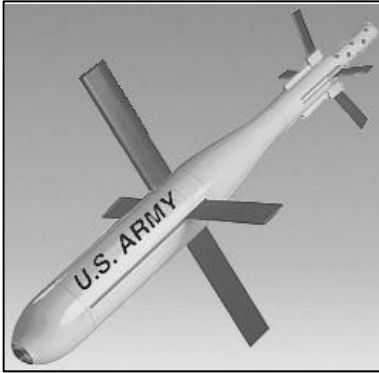
## *(Video Clips)*

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# Precision Guided Mortar Munition (PGMM)

## Overview



Prime Contractor:

- Lockheed Martin

Major Subs:

- Diehl (Germany)
- Draper Labs

Requirements:

- Destroy Hardened Point Targets
- Range: 12km (req'd)  
15km (des'd)
- Weight: < 40 pounds
- Length: < 40 inches

**SAL=Semi Active Laser**

- **Description**

- 120mm Laser Guided Extended Range Munition (ATD)
- Current ATD Design will be Fired with SAL & Inertial Guidance; and Lab Tested with SAL/Inertial/GPS

- **Weapon Platforms: 120mm Mortar Systems**

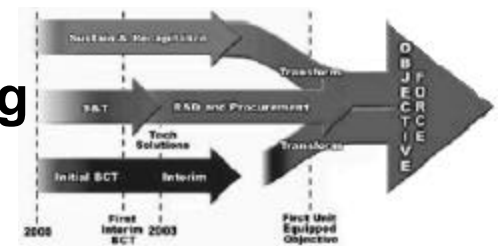
- BCT
- Heavy Forces
- Light Forces (ARC)

- **Targets**

- Primary: Threats in Protective Cover (bunkers, buildings)
- Secondary: Vehicles (Light Wheeled & Heavy Re-supply)

- **Strategic Fit**

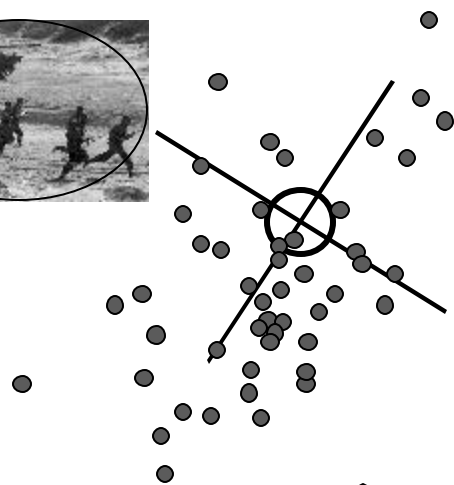
- **Legacy: Combat Multiplier**
- **Objective: Provides Enabling Technologies**
- **Interim: Combat Multiplier**



# Mortar Evolution:

## Suppression and Precision

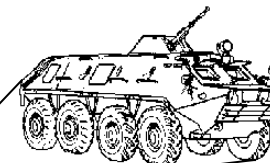
### Today



**High Explosive**

- Area effects
- High volume fire
- Defeat targets in the open
- Suppress personnel under cover

### Tomorrow



**Precision Guided**

- Accuracy through extended ranges
- 1-2 rounds to hit
- Defeat personnel under cover
- Low collateral damage

**Complimentary**

**PGMM gives Battalion Commanders Organic Precision Strike Capability**

# *PGMM Warfighter Benefits*



- **Immediate Response, Extended Range, Surgical Strike**
  - Organic capability for Battalion *and Company* Commanders
  - Force multiplier for Army in MOUT
- **No New Force Structure**
  - Conventionally fired mortar round
  - Fire Support, C<sup>4</sup>I, Weapon, Soldiers & Training assets in place
- **Single Round Kill; More Stowed Kills per Combat Load**
  - Decreases demands for sustainment by increasing killing effectiveness
  - Low collateral damage
  - Greatly reduces logistics footprint
- **Increases Both BCT *and* Legacy Force Lethality**
  - 120mm Mortars are BCT's primary indirect fire asset
  - 120mm Mortars throughout Heavy Force
  - Ranger Regiment adopted Arms Room Concept
  - Light Divisions may also adopt Arms Room Concept (Unfunded)



**Combat Multiplier, Low Cost per Kill,  
Precision Strike Capability**

# Mortar Fire Control System (MFCS)

## Gunner's Display



Alerts Gunner when Call for Fire is Received  
Displays mission information  
Used to position tube to firing elevation & azimuth

## Digital & Voice Communications



## Commander's Interface (CI)



Translates digital messages into user prompts  
Calculates ballistics, records mission data  
Monitors system components

## Navigation & Pointing Devices

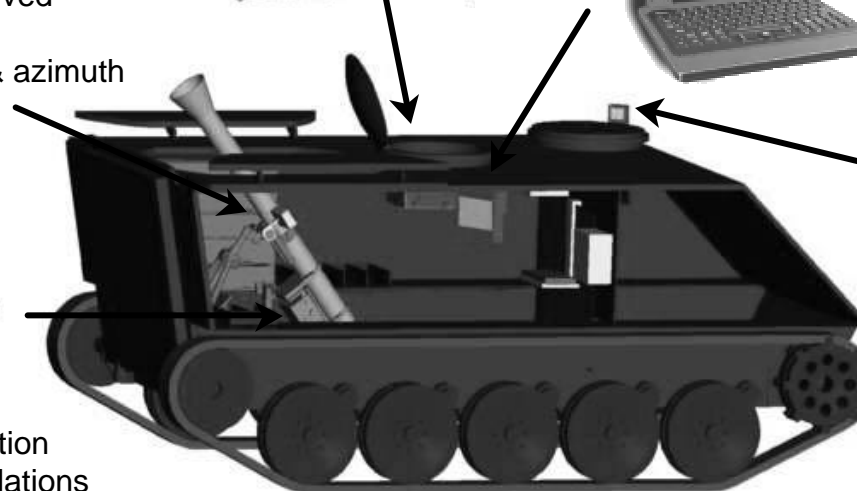


Measures vehicle location & tube orientation  
Sends information to CI for ballistic calculations and vehicle location (for Situational Awareness)

## Driver's Display



Alerts Driver when Call for Fire is Received  
Used to "Rough Lay" vehicle to firing azimuth ( $\pm 20$  mils)



FUE 3QFY02

## Increased Mortar ...

- **Accuracy:** 60m CEP (current is 230m)
- **Survivability:** No Dismount, Aiming Circle or Aiming Stakes; Dispersed emplacement (beyond line of sight)
- **Responsiveness:** First Round out < 1 minute (current is 8-12 min.)
- **Command & Control:** Digitally Linked to AFATDS

**Does for Mortars what AFATDS did for Artillery.**

FDC Vehicle (M577) not shown

Slide 15